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Claims

1 1. A heat sink for convection cooling in horizontal applications, comprising:
2 a plurality of spaced apart cooling fins, wherein each cooling fin has a center
3 portion and opposing outer portions; and
4 an angled base supporting the center portions of the cooling fins, wherein the
5 outer portions of the cooling fins extend beyond an outer edge of the base.

1 2. The heat sink of claim 1, wherein base comprises:
2 a central region for receiving a surface to be cooled; and
3 opposing end regions adjacent the central region.

1 3. The heat sink of claim 2, wherein the central region has a greater width than the end
2 regions.

1 4. The heat sink of claim 2, wherein a bottom surface of each end region is angled with
2 respect to the central region.

1 ⑤. The heat sink of claim 2, wherein the opposing end regions are tapered.

1 6. The heat sink of claim 1, wherein the cooling fins are transversely attached on the base
2 and extend from the base in a substantially vertical direction.

1 7 The heat sink of claim 1, wherein the outer portions of the cooling fins are tapered.

1 8. A heat sink for convection cooling in horizontal applications, comprising:

2 a plurality of spaced apart cooling fins, wherein each cooling fin has a center
3 portion and opposing outer portions;

4 an angled base supporting the center portions of the cooling fins, wherein the
5 outer portions of the cooling fins extend beyond an outer edge of the base so that air can
6 flow horizontally beneath the base and then vertically through the spaced apart cooling
7 fins; and

8 wherein the cooling fins are transversely attached to the base and extend from the
9 base in a substantially vertical direction.

1 9. The heat sink of claim 8, wherein the base is angled with respect to a surface to be
2 cooled and comprises:

3 a central region for receiving the surface; and

4 opposing end regions adjacent the central region.

1 10. The heat sink of claim 9, wherein a bottom surface of each end region is angled with
2 respect to the central region.

1 11. The heat sink of claim 9, wherein the central region has a greater width than the end
2 regions.

1 12. The heat sink of claim 9, wherein the end regions of the base and the outer portions of
2 the cooling fins are tapered.

1 13. A heat sink for convection cooling in horizontal applications, comprising:

2 a plurality of spaced apart cooling fins, wherein each cooling fin has a center
3 portion and opposing outer portions;

4 a base supporting the center portions of the cooling fins, wherein the base
5 comprises a central region for receiving a surface to be cooled and opposing end regions
6 adjacent the central region, and wherein a bottom surface of each end region is angled
7 with respect to the central region; and

8 wherein the outer portions of the cooling fins extend beyond an outer edge of the
9 base so that air can flow horizontally beneath the base and then vertically through the
10 spaced apart cooling fins.

1 14. The heat sink of claim 13, wherein the central region of the base has a greater width
2 than the opposing end regions of the base.

1 15. The heat sink of claim 13, wherein the outer portions of the cooling fins and the
2 opposing end regions the base are tapered.

1 16. The heat sink of claim 13, wherein the base is horizontally mounted on the surface to
2 be cooled.

1 17. A heat sink for convection cooling of microelectronic devices, comprising:

2 a plurality of spaced apart cooling fins, wherein each cooling fin has a center
3 portion and opposing outer portions;

4 an angled base supporting the center portions of the cooling fins, wherein the base
5 comprises a central region for receiving a surface to be cooled and opposing end regions
6 extending from the central region, wherein the central region has a greater width than the
7 end regions; and

8 wherein the outer portions of the cooling fins extend beyond an outer edge of the
9 base so that air can flow horizontally beneath the base and then vertically through the
10 spaced apart cooling fins.

1 18. The heat sink of claim 17, wherein a bottom surface of each opposing end region is
2 angled with respect to the central region.

1 19. The heat sink of claim 17, wherein the opposing end regions of the base and the outer
2 portions of the cooling fins are tapered.

1 20. A heat sink for convection cooling in horizontal applications, comprising:

2 a plurality of spaced apart cooling fins, wherein each cooling fin has a center
3 portion and opposing outer portions;

4 a base supporting the center portions of the cooling fins, wherein the base includes
5 a central region for receiving a surface to be cooled and opposing end regions adjacent the
6 central region, wherein the central region has a greater width than the end regions, and
7 wherein a bottom surface of each end region is angled with respect to the central region;
8 and

9 wherein the outer portions of the cooling fins extend beyond an outer edge of the
10 base so that air can flow horizontally beneath the base and then vertically through the
11 spaced apart fins, and wherein the cooling fins are transversely attached on the base and
12 extend in a substantially vertical direction.

1 21. The heat sink of claim 20, wherein the outer portions of the cooling fins and the
2 opposing end regions of the base are tapered.

1 22. The heat sink of claim 20, wherein the base is horizontally mounted on the surface to
2 be cooled.

1 23. A heat sink for convection cooling in horizontal applications, comprising:

2 a plurality of spaced apart cooling fins, wherein each cooling fin has a center
3 portion and opposing outer portions;

4 an angled base supporting the center portions of the cooling fins, wherein the
5 outer portions of the cooling fins extend beyond an outer edge of the base so that air can
6 flow horizontally beneath the base and then vertically through the spaced apart cooling
7 fins; and

8 wherein the base is horizontally mounted on a surface to be cooled.

1 24. The heat sink of claim 23, wherein the angled base comprises:

2 a central region for receiving the surface to be cooled; and
3 opposing end regions adjacent the central region.

1 25. The heat sink of claim 24, wherein the central region has a greater width than the end
2 regions.

1 26. The heat sink of claim 24, wherein a bottom surface of each end region is angled with
2 respect to the central region.

1 27. The heat sink of claim 24, wherein the end regions and the outer portions of the
2 cooling fins are tapered.

1 28. The heat sink of claim 23, wherein the cooling fins are transversely attached on the
2 base and extend in a substantially vertical direction.

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1 29. A heat sink for convection cooling in horizontal applications, comprising:

2 a plurality of spaced apart cooling fins, wherein each cooling fin has a center

3 portion and opposing outer portions;

4 a base supporting the center portions of the cooling fins, wherein the base

5 comprises a central region for receiving a surface to be cooled and opposing end regions

6 adjacent the central region, and wherein a bottom surface of each end region is angled

7 with respect to the central region; and

8 wherein the outer portions of the cooling fins extend beyond an outer edge of the

9 base so that air can flow horizontally beneath the base and then vertically through the

10 spaced apart cooling fins, and wherein the cooling fins are transversely attached to the

11 base and extend from the base in a substantially vertical direction.

30. A heat sink for convection cooling of microelectronic devices, comprising:

a plurality of spaced apart cooling fins, wherein each cooling fin has a center portion and opposing outer portions;

an angled base supporting the center portions of the cooling fins, wherein the base comprises a central region for receiving a surface to be cooled and opposing end regions adjacent the central region, wherein the central region has a greater width than the end regions; and

wherein the outer portions of the cooling fins extend beyond an outer edge of the base so that air can flow horizontally beneath the base and then vertically through the spaced apart cooling fins, and wherein the cooling fins are transversely attached to the base and extend in a substantially vertical direction.